

Open Soft Problem Statement:

Title:

Design a Graph Calculator

Objective:

The objective of this project is to design a utility software for graph calculator, where a user will enter the functions, x-axis range and y-axis range, and the application will draw corresponding graphs. The user should be able to save the graphs in different file formats.

Basic Architectural Requirements:

The application should have one standalone GUI interface, where the user will enter the details. The GUI interface should produce the graphs in visible format, and allow the users to save the graphs in different file formats (like eps, png, jpeg, bmp etc). The software should support both 2D and 3D views of the graphs.

Such an utility software are very much required for academic purposes, as you can guess!!

Target Features:

The user should be able to enter the functions in either of the following two ways,

1. Enter a function, say, $y=\sin(x)$, with minimum and maximum x, y values
 2. Enter a data set stored in a file in well readable format. The data set can be like this
- | | |
|---|----|
| 1 | 10 |
| 2 | 15 |
| 3 | 20 |
| 4 | 25 |

Where the first column is the x-axis and the second column is the y-axis.

The user interface should,

1. Allow the users to enter as many functions as he/she wants to plot in a single image.
2. Allow the users to view the graphs, and if not satisfied, replot the graph with different parameters.
3. The plots for different functions should use different features (like color, line types, line widths etc)
4. Allow the users to explicitly choose graph properties, like color, line types, line widths etc

5. The application should support both 2D and 3D graph plotting. For 3D plotting, the users should be able to explicitly specify the orientation of the axis.
6. The users should be able to store the graph in file formats of his/her choice. The application should support at least one vector graphics (like eps, pdf etc) and at least one raster graphics (png, jpeg, bmp etc) file format.

The above features are the essential features. However, you may add your own features that you think would be useful.

Environment:

Platform: Linux (Fedora 18 or higher, Ubuntu 13.04 or higher)

Programming Language: C/C++/Java

Development Platform: You can use any open source software development platform like QT, GTK etc.

Report:

All projects must be accompanied with three reports in pdf format. Each report must be a neatly-formatted document (Single spaced, Times-roman, 12 pt font for normal text and 14 pt bold font for headings, both left and right justified).

1. Installation Guide (InstallGuide.pdf): A user guide for installing your software, including system requirements. The installation guide will be followed to the letter to install your software, so you must make sure to assume nothing and mention all installation details explicitly.
2. User Manual (UserManual.pdf): This should contain the list of features available and how to use them. Any user should be able to know about all the features in your system and how to use them from this report.
3. Judges' Report (JudgeReport.pdf): This should contain the following:
 - a. A listing of the features of your application available to the user. Each additional feature you put (beyond the basic features listed above) should carry proper justifications for its inclusion. In particular, it must be accompanied with a description of what it does and why will it be useful.
 - b. A description of the architecture of your system clearly showing the different modules of your system and their interactions.
 - c. A test plan to show how you have tested your system.

Plagiarism: Copying any code specific to the application from the Internet may cause disqualification. The decision of the judges in this regard will be final and binding on all teams.